



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,049	03/24/2005	Ronald Kakoschke	10808/227	1781
7590 Brinks Hofer Gilson & Lione P O Box 10395 Chicago, IL 60610				
01/02/2008				
EXAMINER				
SALERNO, SARAH KATE				
ART UNIT		PAPER NUMBER		
2814				
MAIL DATE		DELIVERY MODE		
01/02/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/529,049

Applicant(s)

KAKOSCHKE, RONALD

Examiner

Sarah K. Harding

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 10-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-85/86)
- Paper No(s)/Mail Date 11/18/05, 03/24/05

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Inventor's Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-9 in the reply filed on 10/03/07 is acknowledged.
2. Claims 10-14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected method of fabricating a field-effect transistor, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10/03/07.

Specification

3. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.

Art Unit: 2814

- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Content of Specification

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.
- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).
- (e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.
- (f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
 - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."

- (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.
- (h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).

Art Unit: 2814

- (k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).
- (l) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.
4. The spacing of the lines of the specification is such as to make reading difficult. New application papers with lines 1½ or double spaced on good quality paper are required.
5. The disclosure is objected to because of the following informalities: Page 21 incorrectly reference transistors 350-356 in Figure 17.
- Appropriate correction is required.

Drawings

6. The drawings are objected to because 28 not clearly defined as being a separate entity in comparison to reference numeral 16 in figure 1. This is not cohesive with the structure illustrated in at Figures 2-5.
7. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate

prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 1 & 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 contains the limitation "part of a covering area of the substrate region being covered by the connecting region, which extends further over a covering area of the source region, the part of the covering area of the substrate region covering the substrate region between the insulating layers and between the control regions". The

limitation "which extends further" is unclear and is being interpreted as the connecting region covers an area of the substrate region and also covers an area of the source region, the covered area of the substrate region being located between the insulating layers and between the control regions.

Claim 5 contains the limitation "at least one of:...wherein the terminal regions are doped in accordance with the other conduction type.". This limitation is unclear when used as the "at least one" of the two limitations of claim 5. The claim is being interpreted as a terminal region doped with a conductivity type.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-2, & 4-7 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Sekigawa et al. (US PGPub 2002/0130354) in views of Mistry et al. (US Patent 5,821,575).

Claim 1: Sekigawa teaches an integrated field-effect transistor, having a substrate region surrounded: by two terminal regions (10, 11), one terminal region being a source region and the other terminal region being a drain region, by two electrically insulating layers (71, 72), which are arranged at mutually opposite sides of the substrate region (9) and are adjoined by control regions (81,82), by two electrically insulating

regions (71,72), the insulating regions being arranged at mutually opposite sides of the substrate region, (FIG. 2-3; [0055-0074]).

Sekigawa does not teach a substrate region an electrically conductive connecting region or a part of an electrically conductive connecting region which produces an electrically conductive connection between one of the terminal regions and the substrate region, the connecting region comprising a metal-semiconductor compound, and part of a covering area of the substrate region being covered by the connecting region, which extends further over a covering area of the source region, the part of the covering area of the substrate region covering the substrate region between the insulating layers and between the control regions. Mistry teaches region an electrically conductive connecting region or a part of an electrically conductive connecting region which produces an electrically conductive connection between one of the terminal regions and the substrate region, the connecting region comprising a metal-semiconductor compound, and part of a covering area of the substrate region being covered by the connecting region, which extends further over a covering area of the source region, the part of the covering area of the substrate region covering the substrate region between the insulating layers and between the control regions (Col. 3 lines 20-33, 65-67, Col. 4 lines 1-2) to improve the performance of the device (Col. 1 lines 39-65m Col. 3 lines 1-20). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device to have modified the device taught by Sekigawa to have the body contact region

connecting a terminal region and the substrate region to improve the performance of the device as taught by Mistry (Col. 1 lines 39-65m Col. 3 lines 1-20).

Claim 2: Mistry teaches the conductive connecting region at least one of: a silicide of a metal having a melting point of greater than 1400 degrees Celsius, a refractory metal silicide or a rare earth metal silicide (col. 4 lines 1-2),

Claim 4: Sekigawa teaches wherein at least one of one insulating region is part of an insulating layer which carries a multiplicity of field-effect transistors, the insulating layer comprises silicon dioxide, and the other insulating region is part of an insulating layer, which insulates a multiplicity of substrate regions [0059].

Claim 5: Sekigawa teaches wherein the substrate region at least one of: contains monocrystalline semiconductor material and is doped in accordance with one conduction type, and wherein the terminal regions are doped in accordance with the other conduction type [0060].

Claim 6: Sekigawa teaches wherein the control regions are electrically conductively connected to one another [0014].

Claim 7: Sekigawa teaches wherein at least one of: the substrate region contains six side areas, the terminal regions are arranged at mutually opposite sides of the substrate region, the control regions are arranged at mutually opposite sides of the substrate region (Fig. 3)

12. Claims 3 & 8 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Sekigawa et al. (US PGPub 2002/0130354) and Mistry et al. (US Patent 5,821,575), as applied to claim 1 above, and further in view of Smith et al. (US Patent 5,683,918).

Regarding claim 3, as described above, Sekigawa and Mistry substantially read on the invention as claimed, except Sekigawa and Mistry do not specify wherein at least one of: the insulating layers for insulating the control regions from the substrate region have an insulation strength of at least fifteen nanometers a distance between the terminal regions is at least 0.3 micrometer, and one terminal region or both terminal regions have a shallow doping profile gradient which permits a switching voltage having a magnitude of greater than five volts. Smith teaches wherein at least one of: the insulating layers for insulating the control regions from the substrate region have an insulation strength of at least fifteen nanometers a distance between the terminal regions is at least 0.3 micrometer, and one terminal region or both terminal regions have a shallow doping profile gradient which permits a switching voltage having a magnitude of greater than five volts for ESD protection (Col. 1 lines 55-60, Col. 2 lines 55-65, Col. 4 lines 60-67). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device taught by Sekigawa and Mistry to have specified one of insulation strength, distance between terminal regions or switching voltage magnitude to provide the proper ESD protection as taught by Smith (Col. 1 lines 55-60, Col. 2 lines 55-65, Col. 4 lines 60-67).

It is also noted that since it has been held when the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable

ranges by routine experimentation. In re Aller, 220 F.2d 454, 105 USPQ 223, 235 (CCPA 1955). Applicant can rebut a prima facie case of obviousness based on ranges by showing unexpected results or the criticality of the claimed range. "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claim. In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." In re Woodruff, 919 F. 2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP 716.02-716.02(g) for a discussion of criticality and unexpected results. There is nothing in the present application to indicate that the claimed parameters are critical.

Claim 8: Smith teaches a switching voltage having a magnitude of greater than nine volts are able to be switched by the field-effect transistor.

It is also noted that where the claimed and prior art products are identical or substantially identical in structure or composition or are produced by identical or substantially identical processes, claimed properties or functions are presumed to be inherent. In re Best, 195 USPQ 430, 433 (CCPA 1977). It has also been held that products of identical chemical composition cannot have mutually exclusive properties. A chemical composition and its properties are inseparable. Therefore, if the prior arts teach the identical chemical structure the properties applicant discloses and/or claims are necessarily present. In re Spada, 15 USPQ 2d 1655, 1658 (Fed. Cir. 1990). In this case the field-effect transistor taught by Sekigawa and Mistry would inherently have the

property of switching voltages having a magnitude of greater than nine volts, because the field effect transistor taught by Sekigawa and Mistry is structurally identical to the device as claimed in claim 1.

13. Claim 9 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Sekigawa et al. (US PGPub 2002/0130354) and Mistry et al. (US Patent 5,821,575), as applied to claim 1 above, and further in view of Fried et al. (US PGPub 2003/0178670).

Regarding claim 9, as described above, Sekigawa and Mistry substantially read on the invention as claimed, except Sekigawa and Mistry do not teach the field-effect transistor being a driving transistor on a word line or a bit line of a memory cell array, the driving transistor applying a control voltage to the word line or to the bit line. Fried teaches the field-effect transistor being a driving transistor on a word line or a bit line of a memory cell array, the driving transistor applying a control voltage to the word line or to the bit line to increase device density [0018, 0050]. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device taught by Sekigawa and Mistry to be a driving transistor in a memory cell array to increase device density as taught by Fried [0018, 0050].

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarah K. Harding whose telephone number is (571) 270-1266. The examiner can normally be reached on M-R 7:30-5:00pm every other F 7:30-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. K. S./
Examiner, Art Unit 2814

*/Theresa T. Doan/
Primary Examiner, Art Unit 2814*